



DX NEWS

The magazine of the
National Radio Club

—SINCE 1933—

Volume 58, No. 3- October 22, 1990 (ISSN 0737-1659)

Inside ...

- 3 .. DDXD-E
- 8 .. DDXD-W
- 9 .. Stevenson Log
- 10 .. Half-Breed Rx

- 11 Radio Roundup
- 12 .. Digital Broadcasting
- 14 .. Formats
- 15 .. R-390 AGC Mods
- 18 .. In the Beginning

- 19 .. Bandscans
- 21 .. Freq. Deviations
- 22 .. Musings
- 23 .. Tower Tips
- 24 .. Are you expired?

CPC Calendar ...

Date	Station	From/To (EST)
Nov. 4	WITZ-990	5:30/6:00 AM
Nov. 4	KVOX-1280	6:00/6:30 AM
Nov. 4	KLEY-1130	6:30/7:00 AM
Nov. 11	WSYB-1380	5:30/6:00 AM
Nov. 12	WARU-1600	2:00/2:30 AM
Nov. 12	KRXY-1600	2:30/3:00 AM
Nov. 12	KORN-1490	5:00/5:30 AM
Dec. 1	KLER-1300	7:45/8:00 AM
Dec. 3	KOJM-610	2:10/2:30 AM
Dec. 10	KUMA-1290	3:05/3:30 AM
Dec. 16	KTIL-1590	3:00/3:30 AM

WITZ-940, P.O. Box 167, Jasper, IN 47546 will present a Special DX TEST on Sunday November 4, 1990 from 0530 to 0600 EST. The test will consist of tones, music, voice and Morse code ID's. Our thanks to Mr. Gary Lee for conducting this test arranged by the Colorado CPC Machine for the National Radio Club.

KVOX-1280, P.O. BOX 97, Moorhead, MN 56561 will present a unique DX TEST on November 4, 1990 from 0600 to 0630 ELT. A special announcement for the National Radio Club will be aired during this time period. This announcement will contain a Morse code ID. This will be mixed with KVOX's normal music programming. KVOX will be using its nighttime facility. Our thanks to Mr. Bob Holtan General Manager for this fine opportunity! Arranged by the Colorado CPC Machine for the National Radio Club.

KLEY-1130, KLEYDrive, Wellington, KS 67152 will present a special DX TEST on Sunday Morning November 4, 1990 from 0630 to 0700 EST. This test will consist of test tones, march music, voice and Morse code ID's. Our thanks to Mr. Vernon Napier, Chief Operator for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

WSYB-1380, P.O. BOX 249, Rutland VT 05701

will conduct a special DX TEST on November 11, 1990 from 0530 to 0600 EST. This test will consist of normal AdCon music program with interspersed voice and Morse code ID's. Our thanks to Mr. Tom Elmore for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

WARU-1600, P.O. BOX A, Peru, IN 46970 will conduct a DX TEST on November 12, 1990 from 0200 to 0230 EST. This test will consist of Voice ID's, Code ID's and March music. We would like to thank Chief Engineer Mr. James L. Swearingen for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

KRXY-1600, 7075 W. Hampden Ave. Denver, CO 80227 will conduct a SPECIAL DX TEST on November 12, 1990 from 0230-0300 EST using 5000w non-directional. The test will contain both Morse Code and Voice ID's. KRXY will be silent for the preceding 1/2 hour and will be conducting routine maintenance. Our thanks to Girard M. Westerberg Chief Engineer. Arranged by the Colorado CPC Machine for the National Radio Club.

KORN-1490, 319 North Main, Mitchell SD 57301 will conduct a Special DX Test on Friday Morning November 16th from 0500 to 0530 EST. Test details will follow. Our thanks to Mr. Joseph

(Continued on page two)

DX Time Machine

From the Pages of DX News

50 years ago ... from the Oct. 26, 1940 DXN: TP's being heard by Joe Brauner, Williamsville, NY, included 4QS and 4BH on Oct. 21, and heard by Steve Mann, Lakewood, OH, were 2YA, 4QN, 2NR, 3YA, 2BL, 4QS, 3LO, 4QG, 3GI, 4YA, 2YC, 2CY, and 1YA.

25 years ago ... from the Oct. 23, 1965 DXN: John Callaman, Pampa, TX, bagged KICY-850 at 4am 10-11, plus Alaskans on 730 and 660.

10 years ago ... from the Oct. 20, 1980 DXN: Heard by Joe Brauner, Punxsutawney, PA, was KCAD-1560 Abilene, TX on 9-22.

R. Shields for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

KLER-1300, P.O. BOX 32, Orofino, ID 83544 will conduct a special DX Test on Saturday morning December 1, 1990 beginning at 0745 to 0800 EST. The test will consist of tones, voice and Morse code ID's. Our thanks to Mr. Jeff Jones, Station Manager. Arranged by Colorado CPC Machine for the National Radio Club.

KOJM-610, P.O. BOX 7000, Havre, MT 59501 will present a special DX test Monday Morning December 3, 1990 between 0200 and 0230 EST. This test will contain Morse Code Id's and other programming. Our thanks to Rob Yaw, Chief Engineer, for conducting this test. Arranged by the Colorado CPC Machine for the National Radio Club.

KUMA-1290, P.O. BOX 340, Pendleton OR 97801 will conduct a special DX Test on Sunday morning December 10, 1990 beginning at 0305 EST. This test will consist of a special public service announcement for the National Radio Club. There will be Morse Code ID's contained with in the announcement. This will air two or more times between 0305 and 0330. KUMA will be broadcasting NBC TalkNet at this time. Our thanks to Mr. Greg A. Smith General Manager. Arranged by Colorado CPC Machine for the National Radio Club.

KTIL-1590, P.O. BOX 40, Tillamook, OR 97141 will conduct a special DX TEST on Sunday Morning December 16, 1990 from 0300 to 0330 EST. Test will consist of Music and ID's. Our thanks to Mr. Van Moe President for this test. Arranged by the Colorado CPC Machine.

From the editor ... Jerry Starr has been on vacation, if you've been wondering where "AM Switch" has been. Jim Renfrew's postcard said, simply, "No reports received - so no IDXD. Hope to have something in next week!" And "Musings of the Members" is down from its usual length. Although short columns in October are normal,

they're not desirable ... so let's get the radios warmed up and pencils sharpened and report!

Don't forget Rick Dau's GTG in Iowa City on November 3. There's a better-than-50% chance that Topeka will be represented; if anyone wants a ride, contact me. We'd be leaving early Saturday morning.

They joined ... John Hart, San Francisco, CA; Tom Walsh, Bedford, MA; David R. Alpert, New York, NY; and Kurt W. Neunzig, Topeka, KS (and Todd and I are working on at least three more active DX'ers in our area, trying to persuade them to join the NRC. Why not join us in recruitment? Send me names and addresses and I'll be happy to send complimentary copies of DXN to potential members.)

Fred Vobbe sent some information (much appreciated, thanks) concerning text transmission via modem and telephone line as per my request in #1. I would still appreciate your input in this area. I've discovered that "Prodigy" is useless for downloading text, for example, as it is graphics- rather than text-based. If you've had experience with CompuServe or America On-Line or other easily-accessible bulletin boards, please write. I'm trying to find the cheapest, quickest, and best way for editors and others to send text to me for DXN.

From the GM ... Mike Knitter would like your help in gathering information on FM stations in your area for the upcoming 4th Edition *FM Station Addressbook*. Send updaters to the present book and in addition include format, network, a telephone number (studio or office) for each station in your area. If you don't have a book to follow, please also send antenna height, address, vertical and horizontal powers, call letters, frequency, and location, plus additional information such as construction permits, future expansions, etc. Compile and send it all by December 1, 1990 to NRC FM Updates - P. O. Box 24 - Cambridge, WI 53523-0024. Thanks.



AUGUST 31-
SEPTEMBER 1,2,3

Pittsburgh'90

Genuine souvenirs
of the '90 convention: a yellow 1x2.5
foot pennant plus a plastic white print on black folder,
with a pad of ruled 8.5 x 11 inch paper: US \$10; \$11 to Canada;
others: write. Order from NRC Publications.
Hurry - get yours before they're gone!

Domestic DX Digest - East

William Hale

734 Barleson
San Marcos, TX 78666

DX Catches in the Eastern U. S. and Canada, with 24-hr. ELT

MEDIUM WAVE ramblings

- Methinks the "season" is here as activity is picking up. Plenty of great catches are reported this week, many for the first time in DDXD-E! Keep 'em comin', gang.
- **Perry Crabill** reports that when checking out his new Palomar loop, it doesn't work as well as his homemade two foot loop fed into the loop input of a VLF Engineering Model L-201 VLF Preamp. However, Perry reports, the Palomar is quite adequate in a number of situations, and is more convenient to use.
- A November 3rd Get-Together is being planned by **Rick Dau** in Iowa City, IA at the Best Western Canterbury Inn just off I-80 Exit #242 in Coralville (Iowa City suburb). The fun kicks off at 2 PM. Bring radios, log books, antennas, etc. Rick would love to see you there!!

SPECIAL

104 1/2
Kamifm

- 640 **WBHX** **MI ZEELAND** - 10/1 on from approximately 1700-2300, off all day 10/2; this reflects their irregular schedule the past couple of weeks: on only 4-6 hours/day, 3-4 days/week, never on weekends; country-formatted when on; their phone has been disconnected (PLB-MI)
- 670 **WKZN** **ME GORHAM** - 9/24 0520-0530 on every day tried since late Sep. w/MoYL, numerous IDs & ads; barely audible the 1st time noted, but stronger daily thru the end of the month, in WWL null; this one makes Maine easy in the Midwest (it was second only to Alaska in difficulty for many years); try for this one again the last part of Oct, Nov & Dec, and the 1st half of months beginning in Jan around Gorham LSR (RK-IL)
- WKZN** **ME GORHAM** - 9/26 0617 XLNT over WWL with MoYL and female DJ; "...congratulations from all of us at WKZN and Arista Records..." went out to a Portland man who had won a cassette of Cole Porter → the "WKZN Morning Sports Scene" with Howard Feldman; this one may be a best bet for Maine at Gorham LSR (REH-ON)
- 1060 **KFIT** **TX LOCKHART-AUSTIN** - has been silent since at least 10/1 pending sale of station and change (back to) to GDS format (Ed.-TX)
- 1080 **WEEP** **PA PITTSBURGH** - made the switch from The Oldies Channel to Business Radio Network on Labor Day; PD Ron Antill tipped us off two days before it happened (RD-IA)
- 1200 **WOPA** **IL CHICAGO** - calls are still WOPA; they apparently never used WXET; still R. Exitos IDs, though (RK-IL)
- 1230 **KWSN** **SD SIOUX FALLS** - 9/28 with new calls (ex:KKFN) and new format emphasizing Weather, Sports and News; CBS Network, Rush Limbaugh afternoons & Larry King evenings (WCM-SD)
- 1330 **WJTA** **IL EVANSTON** - ex:WSSV; also...NRC Log is wrong, per sign-on and sign-off announcements, **night power is 51 watts** (RK-IL)
- 1360 **WKNI** **MI KALAMAZOO** - 10/2 2301 ID given as "FM 103 WKFR and WKMI Kalamazoo"; they are not WKFR as reported in Vol 57 Issue 29; (WKFR(FM)'s legal ID was given at a different time:2254); WKMI programs separately during the day (PLB-MI)
- 1410 **WGRD** **MI GRAND RAPIDS** - 9/28 noted back at full day power (1kw), after at least 2 months of operating at 100 watts or less (PLB-MI)
- 1540 **KSGB** **TX FT. WORTH** - 9/31 2300 with full-info sign-off; address given was:Box 339, Dallas sted address in Log (MH-NE)

UNIDS AND UNID HELP

- 600 **UNID** ?? - 9/22 0644 poor with a radio want-ads sort of thing; one of the phone numbers used an 837 exchange; slogan: "Serving three great southern states, this is AM-600" which would seem to indicate either WREC-TN or WCV-NC; anyone know which one uses this slogan? (REH-ON)
- 610 **C** ?? - 9/24 0410 under WTUN/WIP/WDAF with FF talk || CKAC-730; CFLO or CHNC? (REH-ON)
- 690 **UNID** ?? - 9/30 2043 w/mentions of "Green Bay" during quiz show

w/HS contestants; suddenly gone @ 2047; WLKE? (RF-ON)

4
880 UNID ?? - 9/30 2020 with non-stop early-Beatles mx on eve with exceptional deep west conditions; present after WMEQ-WJ cut back at 2015 (HJH-PA) [Wow, if that was KIXI-WA that would be one heckuva catch!! - Ed.]

920 UNID ?? - 10/1 2120 with "82 Country" slogans, pets lost and found named, mention of "Olympia" (MH-NE) [Why not KQEU Olympia, WA? Got your new LOG yet? - Ed.]

1030 UNID ?? - 9/30 2020 with 2-Rock program; heard most nights (MH-NE) [Isn't KBZR-10 2-Rock? - Ed.]

1040 UNID ?? - 9/30 0818 with Business Radio Network; not WRD (MH-NE) [The Log sez KC8R-CD is 812 - Ed.]

1160 UNID ?? - 9/23 0617 weak under KSL with "Judy in Disguise, With Glasses", suggesting and OLD format; maybe WCCS? (RD-IA)

1180 UNID ?? - 9/15 2203 weak under KKAR with Johnny Horton's "Battle of New Orleans"; methinks OLD, but log sez nobody with that format would be on this late (RD-IA)

1350 UNID ?? - 9/29 2139 with Texas A&M FB (MH-NE) [Definitely NOT KCOR-TX, don't know if either KCAR or KTXJ are on Aggie network. Since A&M was playing LSU that night, how about WSMB-LA? -Ed.]

DX AND EQUIPMENT TESTS



1410 WQUB FL LEESBURG - test not heard (RK-IL)

WQUB FL LEESBURG - 9/15 ...not heard (RCW-MI)

1480 WSDS MI YPSILANTI - 9/13 0500 good with OC and ID on ET (RK-IL)

1510 WANT PA ANNVILLE - 9/18 0023-0026 good with TIs and announcement: "This is WAHT, operating on a frequency check" (RD-IA)

1540 WSMI IL LITCHFIELD - 9/26 0102 over/under KXEL with FC announcement; "WSMI, Litchfield, now signing on for frequency testing"; TIs started about 10 seconds later (RD-IA)

TIS AND OTHER STUFF

530 TIS IN LAKE COUNTY (probably Gary or Hammond) - 9/23 0351 poor in TIS mess with Lake County Visitor's Bureau info; this frequency now sounds like a GYer here...there are 6 TISs within 50 miles of my QTH (RK-IL) [Roger Winsor sez it's in Hammond, see Issue # 1 - Ed.]

MIDNIGHT TO 0800 HOURS ELT

550 CHNO ON SUDBURY - 9/29 0045 fair in mess w/"This is the Nation's Superstation, the Music Radio Network, N-O-S-5"; 0100 Canadian nx; new (RF-ON)

580 KUBC CO MONTROSE - 9/14 0705 fair with detailed ID and wx (67°) (RD-IA)

610 KSKE CO VAIL - 9/14 0700 fair under WDAF with Chicago's "Make Me Smile" - local ads and "K-Ski" ID; this opening to Colorado DID make me smile (RD-IA)

690 KVNA AZ FLAGSTAFF - 9/23 0800 good with satellite OLD I ID: "The Voice of Northern Arizona, KVNA, Flagstaff"; LOGGING #1000!!! .. at last! (RD-IA)

KRMX CO PUEBLO - 9/23 0801 fair with "Kah-Errey-Emmay-Equis" ID and mention of Pueblo; the last time I heard this guy it was KAPI over 6 years ago (RD-IA)

730 WCPT VA ALEXANDRIA - 9/15 0636 fair - poor in mess with ID (RK-IL)

640 WWLS OK MOORE - 9/24 0421 fair with "Sports Final Trivia from Star Communications in Boston over the American Radio Networks"; loud trip tone keyed ID by female; "Sports Radio is 640-AM WWLS Moore-Norman-Oklahoma City"; then gave ID for a second AM station but lost under CFCD-630 splash (REH-ON) [Other 'Twas KXID Wagoner, OK...see 1530 in 1600-2400 ELT section last Issue - Ed.]

910 KLCN AR BLYTHEVILLE - 9/27 0700 fair with brief sign-on: "This is Arkansas'...AM 910, KLCN, Blytheville" (RD-IA)

940 WIDG MI ST IGNACE - 9/26 0656-0715 with C&W mx, IDs as "KC103", ABC Nx, and ABC Sports with Johnny Holliday; IDd as "St Ignace-Petosky-Cheyboygan"; poor signal, mixing with CBM (RCW-MI)

960 WHYL PA CARLISLE - 9/23 0653 fair with ID, MoYL off the bird (RD-IA)

990 CHTX PQ MONTREAL - 9/22 0312 briefly over WRMM with CHR and non-ID "Montreal's 990 Hits. Hit after hit after hit..."; then mention of "12 in a row"; poor with WWCM nulled; ex:990 (REH-ON)

CHTX PQ MONTREAL - 9/29 0550 with IDs as "Montreal's 990 Hits", mentions of playing 10 songs in a row, CHR mx, and ad for D&M Restaurant; very good signal until CBW sign-on @ 0557 (RCW-MI)

1030 WNIL MO INDIAN HEAD - 9/23 0649 with sign-on: This is Washington's Super Sound on WNIL, Indian Head"; DC on at 0646 Flattened W82 and WUFL; #2 from MD (RD-IA)

5
WUFL MI STERLING HEIGHTS - 9/22 0630 fair with sign-on; uses U.S. and Canadian National Anthems at sign-off (RK-IL)

WUFL MI STERLING HEIGHTS - 9/23 0645 fair with promo for a Sunday afternoon show "On Family Life Radio, WUFL" (RD-IA)

1070 WNOW NC MINT HILL - 9/19 0659 atop briefly with ID; NC #4 (RD-IA)

1110 WKYC SC GREENVILLE - 9/30 0120 with local ads, IDs; SC #3 (MH-NE)

CKTY ON SARNIA - 9/17 0215 fair - good with Star Country, ads and ID (RK-IL)

1140 WKWM MI KENTWOOD - 9/30 0740 w/local ads, mentions of Grand Rapids (MH-NE)

1180 WMLX KY FLORENCE - 9/29 0653 with ads for Fountain Square Chiropractic Clinic and Shapley Outlet Mall; IDd as "AM 1180, WMLX, Florence, Cincinnati's memory maker"; MoYL-type mx, nx on the hour, and promo for the 1180 Club, a variety show produced by the station; good signal, mixing with WHAM (RCW-MI)

1220 KGIR MO CAPE GIRARDEAU - 9/24 0305 with satellite NOS using same feed as WUOK-1280 (Unistar, I believe); after Connie Francis song had an "AM-1220 KGIR" call ID drop-in; then - "Too Young" by Net King Cole; roughed up by WKNR/CKCW/CKSM (REH-ON)

WKNR OH CLEVELAND - 9/2 0323-0402 with C&W mx and ads; "Classic Country AM 1220 WKNR Cleveland"; good with GRM about nil; CKBW sometimes atop after 0500 (HH-MD2)

1230 WIGS NY GOUVERNEUR - 9/30 0100 up out of mess w/fair signal, ending wx report for "95-X", then ID by female: "(S-X is 95.3 WGIX and 1230 WIGS, Gouverneur" then - ROK mx (HJH-PA)

1430 KCOH TX HOUSTON - 9/21 0038 strong with UC mx "on the new 1430, KCOH"; Houston #6, overall #995 (RD-IA)

KLO UT OGDEN - 9/21 0005 fair with promo for Wildcat FB - ID; only my 2nd regional logging from Utah (RD-IA)

1480 WZRC NY NEW YORK - 10/1 0017 briefly atop w/ad for upcoming program, plenty of "2-Rock" & WZRC IDs; new (RF-ON)

KSDR SD WATERTOWN - 9/23 0816 fair with ad for carpet store - ID and "Woody Bully" (RD-IA)

1490 WLPA PA LANCASTER - 9/25 0035-0100 w/network talk show, promo for show on WLPA Monday thru Friday at 6:30; poor, under and over UNID with mx (DT-ON)

WESL IL EAST ST LOUIS - 9/25 0054 fair with tail-end of ID: "...is WESL, East St Louis, Illinois" (RD-IA)

1510 WKKL MA BOSTON - 9/20 0630 fair with C&W mx and ID (RK-IL)

1520 WKKB NY BUFFALO - 10/2 0100 fair with ID: "Business Radio 1520, WKKB, Buffalo" - BRN Nx; KDMA running QC! (RD-IA)

WDRA OH TOLEDO - 9/20 0645 fair with ID while checking my tape (recorded by timer) for sign-ons (RK-IL) [It doesn't count if you were sleeping at the time of reception, hi - Ed.]

1550 WTYR TN SODDY-DAISY - 9/23 0255 good with OLD + "Tiger Radio" IDs; no ads or anything else noted (RK-IL)

0800 TO 1600 HOURS ELT

990 KSUP NM ARTESIA - 9/26 0806 w/MBS Nx, local wx, IDs; ad for US Department of Agriculture; NM #13 (MH-NE)

1210 WOGL PA PHILADELPHIA - 9/2 1313-1348 good daytime reception with Phillies BB warm-up pgm and into the game; plenty of ads; "Oldies 1210 WOGL" slogan; apparently the FM does not carry BB (MH-MD1)

1250 KIKC MI FORSYTH - 9/25 0802 w/MBS Nx - local ads and local nx; TC @ 0807; ad for Dedmon's Coast-to-Coast - Willie Nelson mx (MH-NE)

1400 WXXB NY BUFFALO - 9/27 0801 briefly on top with legal ID complete with rapid fire laser blasts: "This is WXXB, Buffalo, Radio WXXB"; so much competition from WQBH/CKCB/WLKK/WMAN/WBAT that I couldn't be sure of their format but believe it was either CHR or AOR; ex:WGXI (REH-ON)

1430 WBEV WI BEAVER DAM - 9/22 0825 with a community bulletin board-type thing mentioning Beaver Dam, Fox Lake, Randolph and the Dodge County Historical Museum; had CL, temp and TC then faded but reappeared @ 0830 with local nxcst; poor with WFOB nulled; #50 on 1430 (REH-ON)

1600 TO 2400 HOURS ELT

610 WIP PA PHILADELPHIA - 9/27 2100 fair, using Palomar Loop to null co-channel 500 watt local WUSQ-AM (PC-VA)

730 KWRE MO WARRENTON - 9/29 2006 SNN Nx, ID: "What's the best way to reach your customers? You're listening to it, KWRE" (MH-NE)

790 CIGH ON SUDBURY - 9/28 2026 good with ad, ID, Blue Jay BB (RK-IL)

840 CHUR ON NORTH BAY - 9/29 1922 w/fair signal, WHAS looped; local wx, then - "Open House Party" (HJH-PA)

6
850 WJAC PA JOHNSTOWN - 9/19 2114 good with OLD, ad, wx (RK-IL)
860 KONO TX SAN ANTONIO - 9/26 2113 ID: "San Antonio's first and only
oldies station, KONO" (MK-NE) [That's their slogan, but it's not
a true statement - Ed.]
870 KPMI MN PARK RAPIDS - 9/30 2000 very good in WWL null with NBC Ns;
2006 KPMI contest promo, Park Rapids wx, ID: 2007 + TalkNet; new
(RF-OH)
WFLD VA FARMVILLE - 9/29 1930 Fair with sign-off... "dedicated to
community service"; no SSB (HJH-PA)
880 KGHT AR SHERIDAN - 9/30 1953 weak to fair signal; atop a looped WCB5
at times; "This is your radio station, BBO KGHT"; had C&W mx
(HJH-PA)
WMEQ WI MENOMINEE - 9/19 1959 fair with TalkNet, ID, NBC Ns, ads
(RK-IL)
WMEQ WI MENOMINEE - 9/30 2005 Fair + good signal ending NBC Ns, then
+ wx report... "Your Color Radio Station, WMEQ" then jx which led
to TalkNet; mixing with WCB5/KGHT/some unID (See UNIDs), a real
mess (HJH-PA)
CKLO NB BRANDON - 9/27 2058-2103 with Old Time Favorites pgm hosted
by female; Canadian opening brings best signal ever heard from
them, and 1st report of new season (WCS-SD)
900 WSEA DE GEORGETOWN - 9/30 1935 fair, atop in CHML null w/"Solid Gold
WSEA" ID; 1938 wx for DelMarVa Peninsula, "Oldies Radio WSEA 900"
ID; new (RF-OH)
WKDM VA STAUNTON - 9/30 1931 briefly surfaced w/ID; new (RF-OH)
940 KIX2 TX AMARILLO - 9/29 2039 ads for Alka Seltzer, K-Mart, Sears; wx
and "94 Kix" slogans (MK-NE)
CBM PQ MONTREAL - 9/11 Midnight fair with brief mention of "CBC
News" before K10A ID; 1st time at this QTH (RD-IA)
970 WAVG KY LOUISVILLE - 9/27 2336-2400 with ads for U of K Football
b'casts, Crimestoppers; IDs as "Wave 970" and "Original Hits";
top of the hour ID and network nx (RCW-MI)
WAVU VA WAYNESBORO - 9/28 1230 with ad: "No reasonable offer will be
refused at Barber Chevrolet-Buick-Geo, Waynesboro"; station is
still on the air despite being dropped from the 970 list of the
1991 edition of the AM RADIO LOG but is listed in location and
call-letter cross-references; good signal (PC-VA) [Perry, Perry,
Perry... this guy is in your own state of Virginia, not PA as you
reported. You had me goin' for a couple of minutes! Look for
WAVU on Page 97 of new Log - Ed.]
WHA WI MADISON - 9/29 2000 with Wisconsin wx and ID + nx (MK-NE)
1000 KXRB SD SIOUX FALLS - 9/30 1941 ID: "Country One-Thousand's \$1000
giveaway" (MK-NE)
1020 WPED IL PEORIA - 9/28 2015 with full-info sign-off, no SSB (MK-NE)
1060 KFIL MN PRESTON - 9/30 2015 C&W mx, Full-info sign-off with no SSB;
MN #42 (MK-NE)
1070 CJRP PQ QUEBEC - 9/29 1814-1830 w/mx, sung in FF, ann FF SID "CJRP;
poor (DT-ON)
1120 KFAB NE OMAHA - 9/30 TalkNet, promo for old-time radio (Maltese
Falcon) "at 9:05 tonight on KFAB"; ad for Best Western Motel in
Fremont, NE, KFAB wx; over/under WBT (DT-ON)
1130 WKED KY FRANKFORT - 9/25 1954 with ID, C&W mx; weak (MK-NE)
WDBY MN MINNEAPOLIS - 9/30 2033 over WKH with Vikings postgame show
and local ads (MK-NE)
1140 KNAB CO BURLINGTON - 9/26 2100 w/AOR; sign-off w/no SSB (MK-NE)
1150 WYYY WI CHIPPEWA FALLS - 9/23 2011 XLNT with non-bird OLD and call-
ID: "The Chippewa Valley's original oldies station, WYYY" + ad
cluster for Ford-Mercury Lifetime Service Guarantee, Progresso
Soup, Financial News Cable and station promo for news feature
"The Hidden Homeless on Way Radio" (REH-ON)
1160 WJJD IL CHICAGO - 9/30 2141-2214 OLD "AM 1160 WJJD", sports scores,
"Great songs, great memories 1160 WJJD"; Fair, no WCCS (DT-ON)
WAMB TN DONELSON - 10/1 2035 ID, Wax Works Show (MK-NE)
1150 CFSL SK WEYBURN - 9/31 2101 ID + Broadcast News; under KVSU's
sign-off (MK-NE)
1200 WAGE VA LEESBURG - 10/1 2045 good atop w/ID; 2049 ad for Southern
State Petroleum + Cincinnati vs Seattle FB game; new (RF-OH)
1240 KASL WY NEWCASTLE - 9/27 2000 strong for a few minutes with ID and
nx; new (MK-NE)
1250 KOFC AR FAYETTEVILLE - 9/27 1955 in briefly with ID; new (MK-NE)
1260 WEZE MA BOSTON - 9/27 2259 very strong with ID, then + Family Radio
programming (HJH-PA)
1290 WKLB KY MANCHESTER - 9/23 1956 good with drawing for the Kentucky
Lottery; many mentions of "the Kentucky Network" (RD-NE1)
KOWB WY LARAMIE - 9/23 2059 fair with promo for the Junior Joe
Boosters + ID; "The station with a heart, AM 1290, KOWB, Laramie"
(RD-NE2)

7
1310 WTLB NY UTICA - 9/30 1911 ID at this time plugged into satellite ROK
Format (HJH-PA)
1350 CKAR ON OSHTAWA - 10/1 2049 with BlueJays BB, ad for Budget Rent-a-
Car; ON #20 (MK-NE)
1360 WEBB MD BALTIMORE - 9/20 2303 UC mx, duo man & woman singing (soul)
23:30 "...WEBB..."; poor under WEBB (DT-ON)
1380 KMUS OK MUSKOGEE - 9/25 2000 with AOR and OLD; 1st time hrd with
these CLs (MK-NE)
1400 KGBX MO SPRINGFIELD - 9/20 2327 Fair with song "Promises, Promises"
ID: "105.9 KGBX is in touch with the Ozarks" (RD-IA)
1420 WLIS CT OLD SAYBROOK - 9/23 2230-2245 OLD ROK, "1420 WLIS", WLIS
Bulletin Board, "write to WLIS, Box W, Old Saybrook", WLIS
Fishing Report; over/under WHK (DT-ON)
WACK NY NEWARK - 9/24 1815-1955 Yankees pre-game show, local sports,
???CED, J WCED (DT-ON)
WCED PA DU BOIS - 9/24 1925-2000 OLD, female announcer, wx "That's
the forecast from WCED" and at 2200 "latest nx, sports, & weather
on WCED, DuBois"; medium poor, WACK "gone" (DT-ON)
1430 WUAM PA ALTOONA - 9/26 2134-2200 w/Pittsburgh vs Chicago BB; 2200
"WUAM, Altoona" and SID; under CJCL with BlueJays BB (2 for 1)
(DT-ON)
1450 KCLD MN ST CLOUD - 9/26 2348-2350 break thru with ad for "...grocery,
pizza, 114 --- Street, Santiago area" (sounded like "San Diego")
but trusty atlas shows a Santiago near St Cloud; disappeared
under an unID with Larry King, etc (DT-ON)
WJXN MS JACKSON - 9/29 2359 distinct "WJXN" heard, but not the "N";
MS #9 (MK-NE)
1460 WACO TX WACO - 9/29 2145 with Baylor vs Texas Tech FB; new (MK-NE)
1510 XGA WA SPOKANE - 9/24 2200 weak under WLAC with C&W song + ID: "We
are a Price Broadcasting station, 50 thousand watt 1510 KGA,
Spokane-Coeur d'Alene" and 7:00 TC (RD-IA)
1530 KHAM MO BUTLER - 9/25 2300 with KC Royals BB, local ads (MK-NE)
1550 KUKI LA SHREVEPORT - 9/25 2051 ID: "96 point 5 KUKI with 40 minutes of
rock" (MK-NE)
1590 KIDZ MO INDEPENDENCE - 9/19 2030:30 Fair with sign-off (RK-IL)
1600 WHCR NY ONEIDA - 9/28 1756-1830 mx, mention of FM station, ad for
Home Center, Rte 5, featuring Armstrong linoleum; poor (DT-ON)
WAYC PA BEDFORD - 9/18 1858-1905 ads and I think they had nx @ 1900;
heavy QRM from WKEN-DE and other unIDs; got ID @ 1900 (KH-MD2)

REPORTERS

WCH-SD WILLIAM C. MOSER//Lake Preston, SD//Zenith K731 + loop
REH-ON CHARLES REH//Leamington, ON//R-390A + Sanserino Loop + TR-3000 open
reel tape deck
PC-VA FERRY CRABILL//Winchester, VA//R-5000 + no-Pal-o-mine Loop
RK-IL ROBERT KRAMER//Chicago, IL//R-71A, R-1000, HQ-129X + 2 RW Loops,
Kowalski Loop + Kantronics Signal Enforcer peak/notch filter
HJH-PA HARRY HAYES//Wilkes-Barre, PA//Superadio + Superloop, SM-2
RCW-MI BOB WALKER//Wixom, MI//ICF-2010, ICF-2003 + Radio West Loop
MK-NE MIKE HAWK//Omaha, NE//R-1000 + 2' coax loop
HK-MD HANK HOLBROOK//Dunkirk, MD//(1) SP-600 + 50' LW (2) SP-600 + Colegrove
Loop
RF-OH RICHARD FRCHO//Willoughby, OH//R7A, NRD-S15, SM-1, LW
DT-ON DON TRELFOED//Scarborough, ON//
PLB-MI MR. PHIL BOERSMA//Spring Lake, MI//
RD-IA RICK DAU//OAKLAND, IA//R-1000 + RW Loop//1005 heard
RD-NE RICK DAU//(1) on I-80 near Kearney, NE, (2) Lexington, NE//Ford Caradio

SOME ABBREVIATIONS AND SPECIAL SYMBOLS USED IN DOXD-E

||:parallel with or to ->to or into :00on the hour AC:Adult contemporary AP:Associated Press BBD:big band BRN:Business Radio
Net C&W:country & western CHR:contemporary hit radio CID:code ID ContChr:contemporary Christian EZ:easy listening EE:English
FF:French GOS:gospel IWK:Interstate Radio Net ::jingle LSR:local sunrise LSS:local sunset mx:music nx:news NPA:National
Public Radio OC:open carrier PBL:political PSRA:pre-sunrise authority PSSA:post-sunset authority QRM:interference QTH:location
REL:religious ROK:rock 'n' roll RS:regular schedule \$stereo SID:singing ID SRS:sunrise skip S&S:Spanish SSB:Star Spangled
Banner SSS:sunset skip TC:time check TT:test tones UC:urban contemporary UPI:United Press International wx:weather

GYDXA UPDATE

1230:
KOTS NM DENING Mike Hawk Omaha, NE 901
1240:
WJJD MS MARION Mike Hawk Omaha, NE 732
1400:
KODY WY CODY Mike Hawk Omaha, NE 700



Domestic DX Digest - West

DX Catches in the Western U. S. and Canada, with 24-hr. ELT

Wayne Heinen

4131 S. Andes Way
Aurora, CO 80013
FIDO NET 104/108
(303) 699-6335 (prepaid only)

Welcome to new contributor Chuck Dixon. Hope to see you here often. Thanks to "CPC Machinemate" Jeff Tynan for typing up his contributions (complete with comments!) while I was at work. Contributors please keep in mind that I edit so that NO item (unless it's in the "Special" category) is more than 30 days older than the masthead date!

Midnight to Midday

- 540 CBK SK Watrous
10/2 0300 CLA Mx & CBC Nx, ID "This is Radio 540 Saskatchewan" s/off 0308 w/ments of Watrous xmtr site. Very good. (CD-CA)
- 590 KSSK HI Honolulu
9/24 Noted off 0620-0700 Back on by 1240. Too Much QRM to DX (TH-CA)
- 650 KYAK AK Anchorage
10/3 0135 Frequent ID's inc "Alaska's Number One Station" Promos for something called "Naughty Bunnies '90". Good (CD-CA)
- 700 CKRD AB Red Deer
10/2 0245 CLA Mx, Ad for Player's Club" Fair to Good (CD-CA)
- 720 KUAI HI 'Ele'ele
9/16 0845 Noted testing with intermittent OC. Off by 0900. Noted back by 1102, Noted following SM w/1159 s/on (DP-HI)
- 830 KIKI HI Honolulu
10/2 0215 Slogan "Hawaii's Oldest Channel" and others First HI this season. Poor (CD-CA)
- 840 KVEG NV Las Vegas
10/4 0230 Dominate w/lcl Sx tlk show 0250 lcl spots/PSA's 0300 ID "Las Vegas Calling KVEG North Las Vegas" NV #13. (0W-CO)
- 880 WCB5 NY New York
10/1 0425 Poor under CKLQ and KJJR. "WCB5 news time, 4:25." NY #5 (JT-CO)
- 880 KJJR MT Whitefish
10/1 0431 Fair to good on peaks "Home of continuous country, KJJR." MT #14 (JT-CO)
- 960 KNDN NM Farmington
10/1 0925 Navaho chanting 0930 "KNDN" & more Navaho Chanting Good w/KYGO slop (WH-CO)
- 1010 CBR AB Calgary
10/2 0140 CLA Mx followed by NX fair o/u SS Pest KIQI (CD-CA)
- 1140 KCMJ CA Palm Springs
10/8 0711 "Nobody plays more Country favorites than KCMJ" and C&W. 1st time for this one (WH-CO)
- 1140 WAKKt MS McComb
10/8 0715 Faded in w/Mississippi Net Ag report to 0721 & C&W Mx, No ID thru 0733. tent rpt on its way. (WH-CO)
- 1210 KUBR TX San Juan
9/29 0001 Poor thru KGYN SS ID by man "Radio Cristiana KJAB(?) 104.9 FM.. KUBR 1210 AM, San Juan Texas.. KMRN 104.9 FM..." SS REL TX # 109 (0W-CO)

- 1230 KTRF MN Thief River Falls
9/28 0300 ID followed by CBSNx; 0305 spot Christian Science Monitor; 0306 Wx & Sx by female ann...sounded like lcl tlk show thru 0320. MN #19 (0W-CO)
- 1240 KWIK ID Pocatello
9/28 0235 Call ID in QRM then faded out Logging # 1001 (0W-CO)
- 1310 KDLS IA Perry
10/1 0718 Good signal mixing w/WIBA w/lcl promo's KFKA nulled (WH-CO)
- 1340 KKLXt WY Worland
10/1 0217 Fair w/CWM and ad for Games-R-U's in Thermopolis. Tent. pending reception report verification (JT-CO)
- 1340 KSGR ID Nampa
10/1 0227 Excellent on peaks with "Idaho's favorite oldies, AM 1340, KSGR." (This morning's haul on 1340 was made possible by KDEN's regular MM SP) ID #8 (JT-CO)
- 1340 KCAP MT Helena
10/1 0229 Fair with KCAP evening news MT #13 (JT-CO)
- 1340 KIKO AZ Miami
10/1 0312 Poor signal. "... in Miami, KIKO" (perhaps this is as close as I'll get to logging a FL station) AZ #51 (JT-CO)
- 1360 KNKN NE McCook
10/1 0800 Noted with s/on "Your Good News Station" and "Listener Supported" REL format for this call change (ex-KICX). (WH-CO)
- 1450 KBFS SD Belle Fourche
9/27 0225 Id only barely through QRM Logging #1000! "... Your 24 hour... station KBFS Belle Fourche" and OLD format (0W-CO) (Congrats!-ed)

Midday to Midnight

- 610 KSKE CO Vail
10/8 1620-1645 Continuous C&W Mx "610 AM Ski Country Vail Colorado" and more C&W..no longer ROK format (WH-CO)
- 840 KVEG NV North Las Vegas
10/2 2300 Good signal mixed with WHAS BRN format, then "This is Las Vegas calling" and legal ID on the hour. This catch was particularly satisfying since the tower for KOA 850 is only 2 miles from my house NV #15 (JT-CO)
- 1280 KHEP AZ Phoenix
10/4 2059 "Send your . to KHEP" briefly u/KXKL AZ #52. (JT-CO)
- 1610 KAF727t CO Mesa Verde Nat'l Park
10/4 2325 Ments of National Park, Pre-historic artifacts, something "located 21 miles into the park" Partial ID "K..727" (JT-CO)

UnID's

- 1530 UNID
9/24 0625 Noted w/American Accented prgm u/

KFBK/2YP; maybe WCKY? (Hard to say Dale w/o any details of the prgm-ed) (DP-HI)

1610 UNID
10/4 2323 "Rain or Shine this station operates 24 hrs a day." Wx from Austin Weather Service. (JT-CO). Ditto on this one 10/8 0525 (WH-CO)

CONTRIBUTORS!

(CD-CA) Chuck Dixon Trinidad, CA - HQ-180A w/1' Air core Loop

(DP-HI) Dale Park Honolulu, HI - ATS-803A w/ Selec-A-Tenna

(JT-CO) Jeff Tynan Parker, CO - Sony 2002 w/4' 2401si Loop

(WH-CO) Wayne Heinen Aurora, CO - RW-TRF-655, R-390A w/4' loop.

(0W-CO) John Wilkins Wheat Crisps - R-1000 w/2.5' loop.



The Stevenson Log ... by Gene Martin

My introduction to DX'ing came in November, 1925, so when NRC member Arthur L. Robb of Pittsburg, KS mentioned to me in a letter that he had a Stevenson's radio log from February, 1926, I knew immediately it was a nostalgia treasure that I had to see.

It so happens that I have only memories from 1926, no log books that old, and any written notebooks of stations heard and so forth disappeared years ago. My earliest notebooks date to 1927-28.

The 1926 Stevenson's, I realized, would show me the broadcast band in which I had first pursued DX'ing as a hobby, the BCB as it existed before the Federal Radio Commission, the BCB where station wavelengths were assigned by the Commerce Department.

So when I indicated to Art Robb that I would give my eye-teeth to see that Stevenson's log, he had it duplicated, 32 pages, and sent it to me. As I said, a genuine treasure for any DX'er with an interest in seeing what it was like in the broadcast band 64 years ago.

Stations' broadcast frequencies were designated as wavelengths in those days, and they were expressed in meters, not kilocycles. The broadcast band extended from 200 meters to 545 meters, and when kilocycle terminology took over, that range became 1500 to 550. I think we oldtimers never forgot meters, and tucked away in the memory is a table of equivalents, so many kilocycles is so many meters, and vice-versa, all across the broadcast band. We learned it just like we learned the multiplication tables in elementary school.

Kilocycles are never mentioned in this 1926 Stevenson Bulletin, as they call it. The cost was ten cents a copy or \$1.00 a year, and it was published monthly.

U. S., Canadian, and world stations are listed in the booklet, but I want to concentrate on the table of wavelengths, for that is what shows what the BCB was like so many years ago. The broadcast band is what the DX'er had to learn and where he went looking for the elusive DX station hundreds or thousands of miles away from home.

Today's DX'ers will find many familiar calls in this section of the band, at strange places on the dial, but they should also note that two stations, WMAQ and KFI, are still broadcasting on the same wavelengths that they used in 1926. And all through the years, 550 has had a St. Louis station on it.

To help today's DX'ers orient themselves, I have inserted the kilohertz a few places in this table of wavelengths. The final zero is left off.

Wave Length	Station
341	KSAC, WKAQ, WMCA, 88 KFAB
345	WLS, WCHD
349	KOB, KWSC, WEEL
353	WJAD, WWJ 85
357	CFCA, CHIC, CHNC, CJDC, CJSC, CKCL, CKNC, CNRT
361	KGO, WHN 83
366	WEH, WDAF
370	WEBH, WJJD
375	KTHS, KVOO 80
380	WGY, WHAZ
384	KJR, WMBF, CNRW 78
389	WTAM, WEAR
395	WFI, WLIT, WOAI
400	WHAS, WHT 75
405	KHJ, WJY, WOR
411	CFCE, CFYC, CHYC, CKAC, CKCD, CNRM 72
416	WCCO
422	WLW, WKRC
428	WSB, KPO 70
435	NAA, CFAC, CFCN, CNRC, CNRO 68
441	KLDS, WOS, WDFW, WLSI, CJCK
448	WQJ, WMAQ
454	KTW, WJZ 66
455	KFOA
461	WCAE
469	WCAP, WRC, KFI 64
476	WFAA, WBP, WTIC
484	WOC, WSUI 62
492	KGW, WFAF
500	WMC, KFRU 60
508	WIP, WOO, KLLX
517	WCX, WJR, CJCA, CNRE 58
526	WNYC, WHO, WOAW 56
535	KYW, WHA
545	KSD, KFUO 55

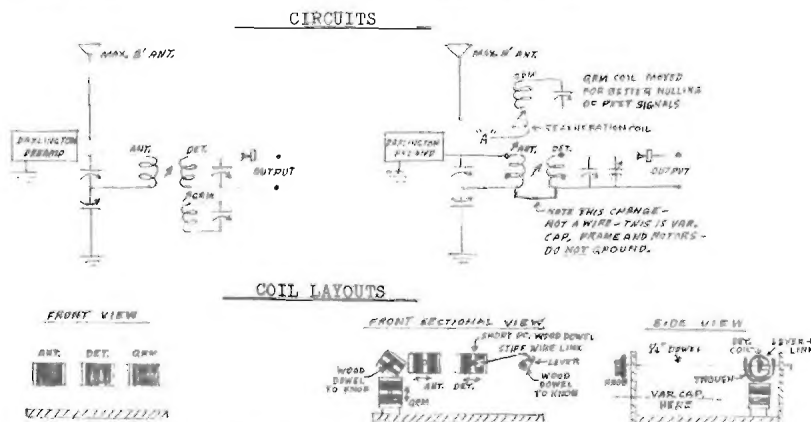
The Answer Man

Got a question about radio? Send it to Russ Edmunds - 753 Valley Rd. - Blue Bell, PA 19422-2052. No question is a dumb question, and Russ will answer all, from basic to highly technical. Watch for the answer in DX News!

The 'Half-Breed' Regen Crystal Set - by Raymond Cole

Obviously this is not a true crystal set, but it combines the selectivity and sensitivity of the Tuggle Circuit crystal set with the power of a regenerative circuit for truly startling results. It was discovered quite by accident in search of a way to make a "One Knobber" (single dial) Tuggle.

The Tuggle Circuit with Darlington preamp (see "The Challenging Crystal Set") is this: the Half-Breed is this:



Three sections of a five section variable capacitor were used. All coils were originally mounted on 1" dowel rod shafts, but this was abandoned except for the regeneration coil, which rotates to control the regeneration. However they should all be wound with the 1" center space to maintain proper band coverage. Tapped at 13 turns from the "floating ground" end, an alligator clip moved to this tap from the "upper" end of the coil, then gives short wave coverage with WWV, 10 Mhz, about 7 degrees right of center of the dial. (I use a photocopy of a 6" protractor as a dial).

Either use a metal panel or cover the back of your panel with aluminum foil, and ground either, since hand capacity will drive a person crazy on a regenerative circuit of any kind (especially when listening to Radio Austria, 9.875 Mhz).

The antenna coil is normally set to just about clear the rotating regeneration coil, but leave it adjustable. Spacing between the antenna and detector coil is normally between 1/2" and 1" and needs to be easily variable to suit, across both bands, to control selectivity on each individual D-X signal. The lever is made of a 1" piece of perforated pipe strap with alternate one-quarter and one-eighth inch holes. The larger hole is used for the dowel, and the lever is glued solidly to it.

I mounted my antenna and detector coils in a U-shaped semi-stiff plastic trough, but stiff paper would do just as well. The trough "hangs" on the two control knob dowel rods. A short piece of dowel through the detector coil has one loose turn of the stiff wire link around it, which slides the coil back and forth in the trough.

Due to the extremely high gain of the Darlington preamp, at "A" a 30 pf capacitor is used most of the time, but for added D-X I used an alligator clip to give the sensitivity, selectivity and regeneration controlling choice on both bands of 12, 30 and 68 pf and .001. The Darlington can easily overload the circuit on strong signals - especially on short wave.

Coils are wound on 1-11/16" diameter toilet paper tubes 1-7/16" long with 1/8" clear at each end and 1" space in the center, exactly 33 turns #26 on each half. The regeneration coil is similar except 13/16" long with 10 turns on each half. Don't forget the 13 turn taps if you want short wave.

The regeneration coil's added turns affect tuning of the antenna circuit slightly, so a small trimmer capacitor must be added in the detector circuit, and will be adjusted to about 50 pf - peak it on a mid dial weak signal.

The output resistance should be 5k minimum or selectivity will be affected adversely. Changing the resistance will make re-peaking necessary.

The Darlington preamp is per "The Challenging Crystal Set" with 2N2222's selected for performance as shown there.

If you use a Radio Shack Mini-Amp (Amp-Speaker, they now call it) for audio output, do not try to use the same battery to power both it and the Darlington, since that won't work due to feedback through the battery.

I have no idea of the D-X limits of this "Half-Breed", but with double tuned circuits and the Darlington it sure is a hot little bugger. I have built two. One for an experimenter who is going to drive 240 miles to get it rather than trust it to UPS. He has heard it perform over the phone, \$42.00 worth of calls. But, please - no requests to build any more. Time is too scarce for me.

Radio Roundup ... by Pete Kemp

Tim Lennon on WERC in Binghamton, NY, was upset because another station employee's car was broken into a her purse stolen by a black man. Lennon then decide that he would refuse to put on air anyone who was black. When callers phone in he would ask them their race and then decide to put them on the air. The station manager obviously was not impressed by this childish act and told Lennox to apologize. He still may be suspended or fired.

WWGT in Westbrook, Maine has changed its calls to WLPZ.

Veteran talkshow host Ron Hunter recently got the ax from WSMB after his wife committed suicide. He was chastised for letting his wife detail their marital problems on the air during his phone in show. This is a truly sad story. Hunter appeared a few days later on the CBS Morning News, explaining what had happened, clarifying a number of points which had been blown out of proportion in the media. He also appeared on the TV Tabloid A Current Affair.

The latest Big Apple "book" is out, showing the top AMers as, WINS, WOR, WCBS, WFAN, WABS, WNEW, WSKQ and WLIB.

Howard Stern's five show has been given the go ahead for a full 13 shows. It airs on WWOR-TV.

Barry Gray will be back at the mike on WOR shortly, only he'll be originating the show from the bedroom of his home, will he is recuperating from hip surgery.

WCNX-1150 in Middletown, Connecticut has switched format to carry the Sun Radio Network.

Steve Kane has been given his walking papers at WABC. The morning spot will be taken over by fellow staffers Kathleen Mahoney and Rodger Skibenes.

FCC has decided to enforce its indecency standards on a 24 hr/day. The FCC had been a little selective enforcing standards during the day and evening hours when children would likely be listening.

WCOL has joined the ranks of the du woppers now playing goldies fulltime.

...WABC-770 New York has picked of ABC Talkradio's Bob Aaronson's show in the 3-6 a.m. spot...National Public Radio recently celebrated its 25th anniversary...WCAU's Dominic Gunn is moving from overnight to mornings on the station. WCAU placed 16th in the latest book, quite a come down for the once mighty station... Interested in news of the oil' sod (Wales, Scotland, England and Ireland), then tune in Toledo radio's WCWA and catch John Connolly's News From Home Show. 10-11 a.m....WDOT-Burlington, VT has switched from country music to the goldies du wop...The FCC's latest Notice of Proposed Rulemaking for AMers contain some interesting points, mandatory am- stereo, limitations on simulcasting, and giving current am stations with interference problems the inside track when allocating frequencies in the new 1605 to 1705 KHz. band segment...The NAB Science and Technology Committee hopes to present the results of its experiments with Suppressed Skywave Antenna Systems in September at the Radio 90 Conference in Boston...A lot of ink is being spread across the pages of professional broadcasting literature concerning the future of Digital Audio Broadcasting (DAB). One prognosticator even goes so far as to predict a new band to accommodate it...While on the subject of bands, many groups are getting prepared for the upcoming WARC (World Administrative Radio Conference) in 1992. The WARC is an international group that gets together at pre-determined times, under the auspices of the ITU (International Telecommunications Union), to allocate frequency spectrum. A very political organization, one that requires a lot of diplomacy to be successful. With all of the technological advances that have come about in the last ten years, this meeting (which can last for months) will surely have ramifications for all of us...So much for now.

DIGITAL AUDIO BROADCASTING

Will it put an end to the distinction between AM and FM?

Broadcaster
— via Brian Vernon

by Steven Crowley

Compact discs sound great. They offer the consumer the finest in recorded audio quality. They're great for radio stations, too, as they're less of a maintenance hassle than tapes or records. Yet, listening to the radio, that compact disc quality doesn't come across.

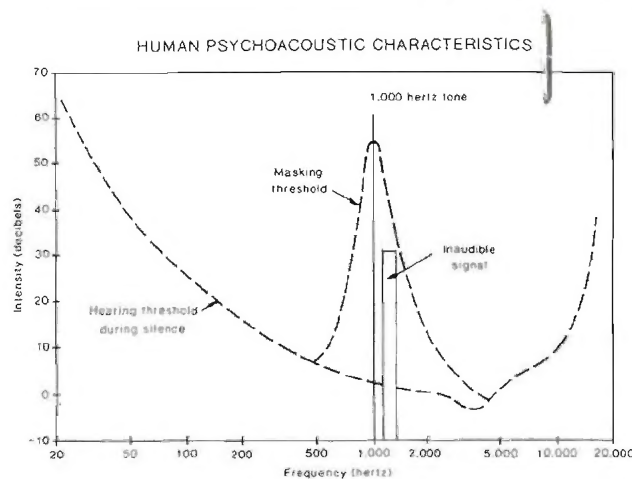
Such is the nature of AM and FM radio. They've served us well for decades, but can't match compact-disc digital quality due to inherent limitations in their analog transmission schemes. Neither AM or FM can match compact discs' frequency response of 20 — 20,000 hertz. AM is subject to electrical noise and interference from other stations, especially at night. FM is subject to multipath interference; this can occur in built-up urban areas where the receiver doesn't have a line-of-sight path to the transmitter. It then has to rely on the diffraction and reflections of multiple signals off buildings. Depending on how they add, they can cancel completely resulting in a momentary loss of service. This is most obvious in an automobile when pulling up to a stop light, your favorite FM station sometimes fizzles to nothing. Move a few feet forward, and it's OK; you've changed the geometry of the multipath problem.

In Europe, they've started from scratch and combined the latest in signal processing hardware with hearing psychology and developed a new type of radio — digital radio — that offers compact disc quality sound. The same technology might someday allow Canadian broadcasters to get their digital-quality audio to the listener.

Much depends on the results of tests taking place this summer under the auspices of the Canadian Advanced Broadcasting Systems Committee, a joint government/industry committee. Joining in the tests are the Canadian Broadcasting Corporation, the Canadian Association of Broadcasters, the Department of Communications and its Communications Research Centre.

The testing program will last through September and includes laboratory and field tests. Over-the-air tests and demonstrations will take place in Montreal, Ottawa, Toronto, and Vancouver. To generate the signal, a one-kilowatt transmitter will operate from 794.5 — 801.5 MHz (straddling TV channels 68 and 69) and feed a directional panel antenna.

Over-the-air digital audio transmission — sending accurate and noise-free audio in the form of digital data — has been tested before, but past schemes require several times the spectrum used by an FM station. It hasn't been practical for general use.



Source: European Broadcasting Union and the Eureka 147 Digital Audio Broadcasting Project

Two consortiums of European broadcasting agencies and consumer electronics companies — the European Broadcasting Union and the Eureka 147 Digital Audio Broadcasting Project — have spent four years and \$56 million (Canadian) to create a new, practical digital audio broadcasting system that eliminates the foibles of AM and FM. Commonly known as the Eureka system, it can deliver compact disc quality sound to the listener in a spectrum-efficient manner.

The Eureka system reduces spectrum requirements in part by reducing the amount of data needed to transmit audio. It does this by throwing much of the audio information away. It doesn't accurately reproduce the audio waveform; instead, it reproduces its sound by taking advantage of the masking properties of audio.

Masking is well known to psychologists who study human responses to sound, or psychoacoustics. While engineers measure frequency and intensity, psychologists are concerned with their perception as pitch and loudness. In masking, the closer two tones are in frequency, the greater the likelihood the louder tone will mask the softer tone. Increasing the frequency separation makes the softer tone more apparent.

The Eureka system uses masking to eliminate the details of audio that can't be heard. First, the audio at the radio studio is converted to digital data. Then, the data are analyzed to determine which loud

sounds are masking which softer sounds, based on a model of human psychoacoustic characteristics. The loud sounds are kept and the softer sounds that can't be heard are discarded as irrelevant information. Furthermore, the amount of data needed to represent the louder sounds is reduced; this increases noise in the audio, but enough data are always used to keep the noise below the threshold of perception.

To further reduce the amount of audio data, the data rate is varied according to the amount of activity in audio. Rock music requires more information than chamber music, which requires more information than an announcer. The transmission system is designed for the highest data rate required. During slow points in the audio, non-audio data can be transmitted increasing the utility of the receiver. These additional data could be used to display information such as call letters, weather warnings, song title or station slogans. All these audio reduction techniques allow the amount of audio data to be reduced by more than 80 percent with no perceptible degradation.

This analysis and restructuring of audio in real-time takes a lot of computing power, but the increasing economies of digital signal processing (DSP) are making it practical for consumer use. DSP of the scope required by the Eureka system used to require prohibitively large computers. Today, the necessary DSP devices are avail-

able on integrated circuits.

Reducing the amount of data needed to represent audio helps lower spectrum requirements, but there's still the multipath problem. Even though a radio signal is carrying precise digital data instead of analog information, it can still interfere with itself at certain locations. The Eureka system solves multipath problems by taking advantage of the frequency-dependence of multipath. Since radio frequencies behave differently, multipath interference will usually occur on one frequency at a time.

With the Eureka system, the data are split up and portions transmitted on many closely-spaced frequencies. Because of the frequency dependence of multipath, only one frequency will be out of service at any one time. This means most of the frequencies, and hence most of the data, will be available.

Though a fraction of the data might not get through, this is overcome by using error correction techniques. Extra data representing error correction information are added to the audio data stream. These data tell the receiver what patterns of audio data should be being received at any instant. If the receiver detects an error, it then uses an algorithm to accurately predict what the missing or incorrect data should have been.

These error correction features enable the system to use much less power than conventional radio stations. Instead of brute force, the Eureka system uses the mathematics of error correction to finesse the audio data to the receiver. It's estimated that less than five percent of the power used by an FM station would be required for equivalent coverage. In recent tests, the city of Rennes, France (population 200,000) and the surrounding countryside were served with an on-the-air experimental system having a power of 11 watts.

The Eureka system is still under development so final specifications aren't known; many tradeoffs are being considered. For example, the better error correction schemes require more added data — that increased spectrum requirements.

It's hard to pin down final specifications because frequencies aren't now available. Ideally, technical specifications will be tailored to the unique characteristics of those frequencies. The developers are seeking frequencies for use in Europe, where it is planned to have audio transmitted by satellite. This would be augmented with ground-based transmitters to fill-in coverage gaps.

It's uncertain where the needed spec-

trum would come from for a digital audio broadcasting service in Canada. A mitigating factor is that the Eureka system is spectrum efficient. From one location, three separate stereo audio programs, or "stations", can be sent in the same amount of spectrum required by one FM station.

Since all stations can emanate from one location with equal quality, the system could be technical equalizer. Every station in a city could have equal-quality digital signals.

This summer's tests have several goals. It's hoped to determine basic parameters required for implementation, such as power requirements and interference criteria. The performance of the Eureka system will be evaluated in the presence of noise and interfering signals. Also tested will be its performance in shadow and multipath conditions.

Under consideration is a plan to implement the system pending successful test results and spectrum availability; it would be introduced sometime between 1995 and 2000. Priority for assigning DAB channels would be given to existing AM and FM stations. Any additional channels would be made available to other applicants. DAB would be primarily terrestrially based, but direct broadcast satellite service would be available for remote areas, and for national programming services to all areas.

The Eureka system would coexist with AM and FM stations until there was a high penetration of digital receivers. Then, AM and FM operation would cease.

DAB is seen as resolving, once and for all, competition problems between AM and FM. If AM and FM are turned off, it certainly would.

Steve Crowley is a consulting engineer with the Washington, D.C. firm of du Treil, Lundin & Rockley, Inc.

THE FAMILY CIRCUS



"When will it be my turn to listen to Daddy's earmuffs?"

Formats

Changes in programming status; reported by NRC members and others

Tony Fitzherbert

356 Jackman Avenue
Fairfield, CT 06430

WCGI-1390, as noted in a past column found itself embarrassingly low in the Chicagoland ratings, so, according to Geov Parrish, its Black talk format has been dumped for Black oldies...and the station calls itself "Dustyradio". Other than that change, the format switches listed below reveal a boring potpourri of satellite programming, FM simulcasting, and business news....and the AM dial is turning into a Sargasso Sea of mediocrity. And entire staffs of on air personnel are helping to swell the nation's unemployment rate.

Other than Geov, Mike Riordan and Eric Bueneman provide us with updates. And Perry Crabhill, Jr. provides a Dial Scan from Winchester, VA. Here we go.....

- 680 WCNN GA North Atlanta - CNN Network news (EB).
- 750 WSB GA Atlanta - Now all news/talk, AC music gone (EB).
- 770 WAIS OH Buchtel - CWM (GP).
- 900 KOES TX Hamilton - Spanish (GP).
- 910 KOXR CA Oxnard - Spanish (MR).
- 910 WKEQ KY Burnside - Satellite traditional CWM (GP).
- 920 WGHQ NY Kingston - Satellite adult standards (GP).
- 930 WMGR GA Bainbridge - Satellite rock oldies (GP).
- 930 WZNN NH Rochester - Now all news (GP). EX-WKOS, adult standards (TF).
- 980 KENY AK Kenai - Talk (GP).
- 1010 KRNI IA Mason City - Ex-KLSS, now jazz and classical// KHKE-FM, Cedar Falls, station was donated and cannot be sold for three years (GP).
- 1050 WXTX AL Alexander City - CWM//FM (GP).
- 1050 KOFY CA San Francisco - SMN Kool Gold (MR). Sale of FM left station with no studios, so they // KOFY-TV, Channel 20 for a week! (GP).
- 1080 WEEP PA Pittsburgh - Business news (GP).
- 1110 WUHN MA Pittsfield - Satellite rock oldies (GP).
- 1120 WBNN GA Gordon - Business news to Macon (GP).
- 1140 KPRW OK Oklahoma City - Business news (GP).
- 1150 WCNX CT Middletown - News/talk (Tony Fitz).
- 1170 WKIQ FL Bushnell - Standards //WKFL (GP).
- 1230 WTKX FL Pensacola - Satellite rock oldies (GP).
- 1230 KKGR OR Gresham - News/talk (GP).
- 1240 WKDA TN Nashville - All news (GP).
- 1310 WDPN OH Alliance - EZL (GP).
- 1320 KGMG CA Oceanside - EZL (GP).
- 1330 WNIX MS Greenville - Satellite rock oldies (GP).
- 1360 WTSB GA Rome - Southern Gospel 0900-1200, otherwise CWM//FM (EB).
- 1380 WCOL NH Portsmouth - News/talk (GP). With 930, Rochester, that's two news/talk stations in this market (TF).
- 1380 WGUS SC North Augusta - Traditional CWM (GP).
- 1390 WWOV VA Lynchburg - Satellite all news (GP).
- 1400 KBLX CA Berkeley - Now Black AC//FM (GP).
- 1440 WCDL PA Carbondale - Adult standards (GP).
- 1450 WSMQ AL Bessemer - Gospel (GP).
- 1470 WWMW OH Toledo - Ex-WOHO, now AC // FM (GP).
- 1490 KDB CA Santa Barbara - Now KSPE, Spanish, some English programming (MR).
- 1500 WDFC GA Dallas - back with CWM/Gospel (EB).
- 1520 KFXX OR Oregon City - Talk, sports (GP).
- 1550 KSVY WA Opportunity - Fine arts (GP).
- 1560 WSQR IL Sycamore - CWM (GP).
- 1570 WBUG NY Amsterdam - Ex-WKOL, CWM//WLKO (GP).
- 1580 KOKB OK Blackwell - News/talk (GP).
- 1590 KHIT NV Sun Valley - News/talk (GP).
- 1600 WXIN KY Eminence - Full service info and religion (GP).

Thank you very much to our contributors. When you send in items for this column, could you please indicate the city of license? This would help cut down the time needed to put the column together, as I prepare it at work, during lunch time. Thank you very much....and, as we are into another DX season, do get your format changes in to your Formats column.

73's

WTAK10
Rock-n-Roll

R390A AGC/BFO Mods ...By Dr. Dallas Lankford

For Improved SSB and CW

Two things prevent an R-390A from performing well on SSB and CW signals - unsuitable attack and release times for SSB and CW, and low BFO amplitude at the diode detector.

The usual way to demodulate SSB or CW is with a product detector. There are two ways to add a product detector to an R-390A. The BFO circuit can be converted to a product detector as described by Capt. Paul Lee in his 1968 CQ article, "Modifying the R-390A receiver for SSB," pages 55-58; see also a variation using relay switching which includes the R-390A noise limiter function with the product detector as described by Eugene Hubbell in his 1974 Ham Radio article, "Improving the R-390A product detector," pages 12-15. Or an external product detector can be connected to the R-390A 455 KHz IF output, such as one of the military sideband converters, a Hammarlund HC-10 converter, or a home built product detector like the one described by Alan Nusbaum in his November 1985 Ham Radio article, "External product detector improves receiver performance," pages 107-111.

However, there are disadvantages to these approaches. Lee's product detector requires that an R-390A mainframe be rewired, which means that you cannot use that mainframe without a specially modified IF subchassis. In addition, the noise limiter is bypassed, and Hubbell reported that there was a regenerative effect which occurred at the BFO frequency, resulting in a peak in the audio response. Hubbell implemented Lee's mod with a relay, which eliminated the regenerative effect. He also expanded Lee's mod by making the noise limiter operational with the product detector. But Hubbell's mod requires a special Potter and Brumfield relay (type PW5LS, 2 mA, 10K ohm coil) which now costs about \$100 retail, and the relay must be mounted in a 7 pin miniature socket added to the IF subchassis. Hubbell's approach can be implemented with an ordinary low voltage relay, but then you will have to provide additional low voltage, high current, DC for the relay coil, and use a BJT to switch the relay on and off with the switched 200 volt B+ line. There is hardly enough space to mount the necessary additional components. The military SSB converters are almost always large and heavy, and generally use many tubes (CV-157: 44 tubes, 125 lbs.; CV-1982: 23 tubes, mostly nuvistor, 30 lbs.). I have been told that there is a small solid state SSB converter made by McGee Industries, but I have never seen one. The Hammarlund HC-10 converter (only 10 tubes) requires precise frequency alignment for whichever sideband you want to use, or a wider than necessary R-390A bandwidth if you want to switch sidebands quickly. If you use a wider than necessary R-390A bandwidth, then adjacent QRM activates the R-390A AGC and degrades the performance of the HC-10. Finally, none of these product detector mods or add-ons does anything about the unsuitable R-390A attack times and release times for SSB and CW.

For SSB an attack time of 2 milliseconds (mS) is often stated as optimal, while release times of 500 mS for fast SSB release and 2 seconds (S) for slow SSB release are considered suitable. My goal was to modify the R-390A AGC in such a way that attack times for all three AGC speeds (FAST, MED, and SLOW) were about 2 mS, and the MED and SLOW release times were about 780 mS and 2 S respectively.

My starting point was Cornelius' AGC mod, which speeded up attack times for FAST and MED. The original Cornelius AGC mod removed R545, replaced R546 with a back pointing diode, and replaced R547 with a 10K ohm resistor. I developed a better variant of Cornelius' AGC mod by leaving R545, R546, and R547 unchanged, and adding two back pointing diodes, one across R546, the other across R547.

To improve the SLOW attack time, it was necessary to redesign the SLOW AGC circuit. In the SLOW AGC position, C551 is connected across the plate and grid of V506A. By unsoldering the wire at pin 1 of V506A (which connects lug 8 of S107 and pin 1 of V506A) and resoldering it to a convenient nearby ground lug (pin 8 of V506), the SLOW attack time problem was mostly solved. But with this change the SLOW and MED attack and release times are identical. So a new capacitor C1 was inserted from lug 9 of S107 to ground (after removing the original ground connection). Now in the MED position C1 is in series with C551, which permits the MED release time to be adjusted to a smaller value than the SLOW release time.

I don't like modifying an R-390A mainframe as a matter of general principle. However, the addition of C1 does not prevent using an unmodified IF subchassis. The MED release time with an unmodified IF subchassis will not be as slow as with an unmodified mainframe, but that is hardly noticeable.

At this point in my experiments the SLOW release time was about 500 mS, but a slow release time of 2 S was desired. I tried adding additional capacitance in parallel with C551, but that caused a slower SLOW attack time (and the SLOW attack time was already too slow at about 10 mS). To make the SLOW release time slower without increasing the SLOW attack time, R547 was removed (leaving only the back pointing diode in place of R547). I learned the hard way that this diode must have a very high back resistance, and that 1N34A and 1N270 germanium diodes are not suitable. A 1N4148 or 1N914 is suitable because they have a reverse leakage current rating of 0.025 microamps at the maximum rated voltage of 75 volts, which works out to a back resistance of about 3000M ohms. Thus, the AGC capacitors are forced to discharge through the 1.77M ohm combined resistance of R201 and R234 (a

voltage divider for the 6DC6 RF amplifier grid AGC voltage].

After R547 was removed the SLOW release time was too slow, about 3.7 S. To adjust the SLOW release time to about 2 S, C551 was replaced with C2. My final AGC mod is shown on the following simplified schematic. I used a scope to measure the release times, and confirmed that the release times can be calculated from the conventional $T = R \cdot C$ time constant formula (when R is in megohms and C is in μF , T is in seconds). So it is easy to select the values of C1, C2, and even C548 for whatever release times you desire. The time constant formulas are as follows: $T_{\text{FAST}} = 1.77 \cdot C548$, $T_{\text{MED}} = 1.77 \cdot \left(C548 + \frac{C1 \cdot C2}{C1 + C2} \right)$, and $T_{\text{SLOW}} = 1.77 \cdot (C548 + C2)$.

For unchanged C548 ($= 0.1 \mu\text{F}$), C1 = $0.47 \mu\text{F}$, and C2 = $1.22 \mu\text{F}$, the measured and computed release times were about 180 mS, 780 mS, and 2.3 S for FAST, MED, and SLOW respectively.

Replacing C551 by the smaller capacitance ($1.22 \mu\text{F}$) had the beneficial effect of speeding up the SLOW attack time to about 6 mS. The MED and FAST attack times were about 3 mS and 1 mS respectively. The SLOW attack time is not quite as fast as I wanted, but it is the best that can be done without more substantial modifications.

Like the Cornelius mod, my AGC mod increases AGC line voltage, which causes higher carrier level meter readings and reduces the signal levels at the diode detector, thus reducing audio output. The reduced audio output is not a problem because an R-390A has plenty of reserve audio gain. The increased carrier level meter readings should not be a problem for most R-390As. But if the meter pins on strong signals, there are two cures. Unsolder one of the meter leads and add one ohm resistors one at a time until the meter no longer pins on strong signals. The carrier level meter has a very low internal resistance, about 17.4 ohms nominal, so a small additional resistance will cause a large change in meter readings. The other cure is to replace R524 (680 ohms nominal) by a larger resistor. The best solution here is to add a 500 ohm, 2 watt, ten turn, wire wound resistor in series with R524. In effect, this adds a meter sensitivity adjustment. The reduced signal levels at the diode detector has the beneficial effect of reducing distortion on SSB and CW.

The improvement in SSB quality caused by reduced signal levels at the diode detector, the difficulty of converting an R-390A BFO circuit to a product detector, and the defects of add-on converters motivated me to examine the possibility of further improving the diode detector for SSB and CW. In his May 1956 QST article, "Reception with product detectors," Murray Crosby, W2CSY remarked that proper reception of SSB may be obtained with a diode detector provided the signal amplitude entering the diode detector is less than or equal to the BFO amplitude.

I added a 47 pF 500 volt mica capacitor in parallel with the 12 pF BFO injection capacitor C535, and was pleased that most of the residual SSB distortion was eliminated. But when I measured the signal and BFO amplitudes I was surprised that a 50 dB unmodulated RF signal produced a 4 volt peak signal at the diode detector, and that the BFO was already 12 volts peak with the 12 pF injection capacitor alone.

Wally Chambers, K5OP provided the answer to this perplexing situation. In the 49th (1972) and 54th (1977) editions of *The Radio Amateur's Handbook*, page 239, it is said that the BFO signal amplitude should be 5 to 20 times greater than the strongest SSB or CW signal at a diode detector if distortion is to be minimized. The addition of a 47 pF capacitor across C535 increased the BFO amplitude at the diode detector to about 25 volts peak, which makes the BFO amplitude about 6 times greater than a 50 dB unmodulated RF signal. There is apparently some room for additional improvement. Wally suggested that replacing R530, the 22K ohm BFO plate resistor, with a 12 mH choke might further increase the BFO output, but I have not tried that. The 22K ohm BFO plate resistor is a large 1 watt resistor which is difficult to remove, and there is not much space underneath or beside the BFO bellows coupler for a 12 mH choke.

For Capacitors C1 and C2 I used 250 volt mylar, radial leads. For a $1.22 \mu\text{F}$ capacitor I used a $1 \mu\text{F}$ capacitor and a $0.22 \mu\text{F}$ capacitor in parallel. I used 1N4148 diodes from a Radio Shack package marked 1N914.

To add C1 you will need to remove the R-390A front panel. Unsolder and remove the end of the insulated stranded wire, nominally white insulation, at pin 9 of S107. Clip one or more loops of cable lacing which secure the white wire to determine if the other end is connected to lug 1 of the LIMITER potentiometer R120. If so, the white wire may be removed completely. Tie the loose end(s) of the cable lacing. If desired or necessary, use new cable lacing to tie new loops where the old loops were removed. If the white wire does not terminate at pin 1 of R120, or if you do not want to remove the white wire, you can add a small insulated 4-40 standoff to the top screw of S107. If there are not enough screw threads to mount the insulated standoff securely, you will have to remove the nut and/or lock washer. And if the nut and screw threads are painted with varnish, you may have to remove S107 from the front panel to access the screw head. A hot soldering iron tip can be used to soften the varnish so that the nut can be removed without stripping the screw head or rounding off the nut (they are small and nominally brass).

R546 is usually connected to pin 1 or 2 of socket XV509 and to an insulated standoff. It is easy to add a diode across R546. The cathode lead of the diode can go to either pin 1 or pin 2 of XV509, and the anode lead of the diode goes to the insulated standoff.

R547 is usually connected to pin 2 of socket XV506 and to an insulated standoff. How easy it is to remove R547 depends on the order in which the other wires are mounted on the insulated standoff. You may have to temporarily remove other wires to access the R547 lead. Be careful uncrimping the lead of R547 at pin 2 of XV506. It is easy to break a tube socket lug. The cathode lead of the diode goes to the insulated standoff, the anode lead to pin 2 of XV506.

C551 is not removed from the IF subchassis, and one lug of C551 is used as a tie point. Remove C548. One end is usually connected to a ground lug beside XV509, the other end to one of the C551 lugs. Save C548 in case you want to undo my mod. Unsolder and remove the end of the insulated stranded wire, nominally white with blue and black tracers, attached to the same lug of C551 to which C548 was attached. Take a 4.5 inch length of insulated, stranded, tinned, #22 wire, strip 0.5 inch of insulation from one end, strip 1 inch of insulation from the other end, remove the solder from the lug of C551 to which C548 was not attached (this lug of C551 should have attached to it an insulated stranded wire which is nominally white with blue and red tracers), run the short stripped end of the stranded wire through this lug of C551, crimp it, and solder it. On the metal panel beside C551 there are two Phillips head screws which mount ground lugs in adjacent compartments. Remove the screws and reverse them. Mount two small insulated 4-40 standoffs on the screw ends. If there are not enough threads to securely mount the insulated standoffs, you will have to use longer screws. Mount C2 on the two insulated standoffs, attach the free end of the wire removed from C551 (white with blue and black tracers) to one standoff, add a $0.1 \mu\text{F}$, 250 volt, mylar capacitor running from that same standoff to the ground lug from which C548 was removed (this $0.1 \mu\text{F}$ capacitor replaces C548), attach the free end of the new stranded wire added to the other lug of C551 to the other insulated standoff, and resolder or solder all remaining added or changed lugs.

To add a 47 pF capacitor across C535 you must remove the BFO PTO bellows coupler. The spline set screws in the bellows coupler are painted with varnish. To remove them without stripping the splines, use a 45 watt 900 degree soldering iron to soften the varnish. Apply the hot iron tip directly to a set screw for about 30 seconds, and then apply reasonable pressure with a spline wrench. If the set screw does not release with reasonable pressure, apply the hot iron tip again for about 30 seconds.

You may wonder why Collins did not design the R-390A AGC this way and save us all the trouble of modifying the AGC for fast attack and slow release. And why did they use the Miller effect circuit for the SLOW AGC circuit? After all, the Miller effect SLOW release circuit in an R-390A has the disadvantage of being slow (200 mS) attack. I learned what I believe is the answer quite by accident: reliable SLOW release.

As I was developing my AGC mod, I discovered to my amazement that the SLOW release time got faster as the R-390A warmed up. I first noticed this effect by observing the carrier level meter. Did I imagine it? No. Scope measurements confirmed that the SLOW release time gradually decreased from about 2 S shortly after turn on from a cold start to about 500 milliseconds after 30 minutes. The cause was traced to a gassy 1st IF amplifier tube. It appears that Collins used the Miller effect SLOW AGC circuit because it is not effected significantly by gassy AGC controlled tubes.

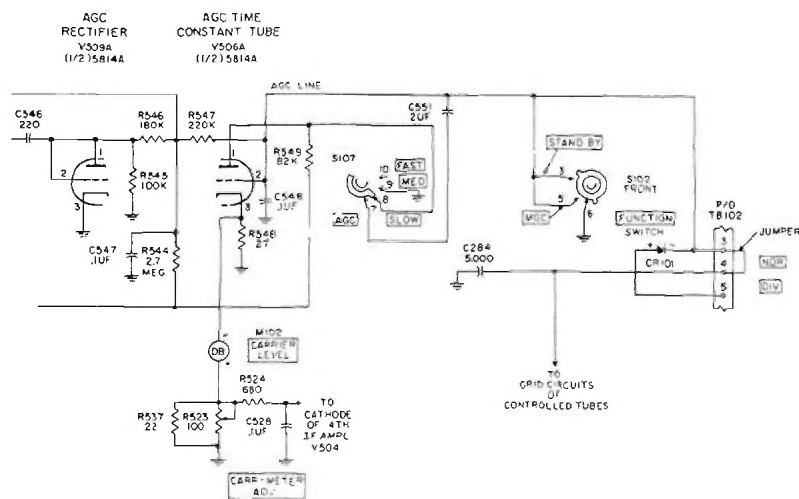
That's the bad news. The good news is that it is relatively easy to determine if a gassy tube is degrading the SLOW release. Merely observe the carrier meter descent rate when you tune quickly away from a calibrator marker shortly after you turn on the R-390A from a cold start, and then observe the descent rate about 30 minutes later. If the descent rate is noticeably faster, then one or more gassy tubes may be the cause. The most likely candidates are the 1st, 2nd, and 3rd IF amplifier tubes. One of these three tubes was gassy in two out of three IF subchassis I have modified. Naturally, these bad tubes tested good on a tube tester. The RF amplifier and three mixer tubes are also candidates, as well as the 4th IF amplifier, AGC amplifier, and perhaps the AGC time constant tubes.

I was concerned that my AGC mod should not degrade the excellent AM performance of an unmodified R-390A. It does not. In two modified IF subchassis I included a 330K ohm resistor in series with the diode which replaced R547 and a switch across the resistor. In effect, this provided switched attack times, slow attack for AM and fast attack for SSB and CW. After considerable listening I have concluded that there is little benefit to switched attack times. A few listeners, like me, may hear a small amount of very low frequency (below 50 Hz) audio distortion on AM signals using the FAST AGC speed with fast attack with the 455 KHz IF output feeding an AM synchronous detector followed by a hi fi amplifier. But most listeners will not notice any difference between fast and slow attack. If you have no interest in SSB or CW, there is hardly any reason for you to do my mod because it does not improve AM performance. Of course, with the original R-390A AGC it is annoying that the carrier meter pins for several seconds when switching between SLOW and MED. That does not happen with my mod.

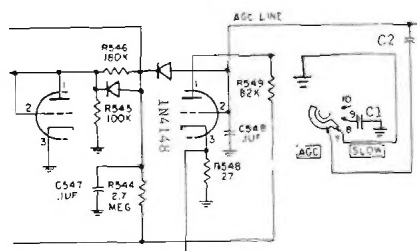
I would like to express my appreciation to Wally Chambers, K5OP for sharing his experiences modifying R-390A AGCs, and for discussing many of the ideas in these mods.

The Challenging Crystal Set

For hobbyists demanding the ultimate DX challenge, Ray Cole's publication detailing step-by-step procedures in building a crystal set is for you! Only \$3.00 ... order from the Publications Center, or use your Visa/Mastercard by phoning (608) 423-4159. Overseas customers, please write.



After Modification



IN THE BEGINNING

BY JOHN D. BOWKER

THIS IS THE COMPLETE LIST OF U. S. BROADCAST STATIONS ON THE INDICATED
FREQUENCY AS PUBLISHED BY THE FEDERAL RADIO COMMISSION IN 1934. "S"
MEANS SHARED; "SH" MEANS SPECIFIED HOURS; "T" INDICATES TRANSMITTER
LOCATION; "D" MEANS DAYTIME OPERATION ONLY; "U" MEANS UNLIMITED TIME.

Frequency (kc)	Call letters	Main studio and transmitter location	Power	Time designation
710, clear----	WOR	Newark, N.J.----- T—Kearny.	5 kw ----	U.
720, clear----	KMPC WGN	Beverly Hills, Calif.--- Chicago, Ill.----- T—Elgin.	500 w. --- 25 kw ----	L—WOR. U.
730, Canadian exclusive.				

Bandscans

Chris Cuomo

**670 Third Avenue
Verona, PA 15147-1349**

Audible stations from a DX'er's location at given times.

CHRIS CUOMO
LAKE BUENA VISTA, FL
'85 Delco ETR
June 23-29, 1990

various times

540	WGTO PINE HILLS	5	1120		
550			1130	WBFB Bartow	2
560	WQAM Miami	2	1140	WONQ ORLANDO	4
570	WTKN Pinellas Park	2	1150	WTMP Temple Terrace	2
580	WBOB ORLANDO	3	1160		
590			1170	WAYS Davie	1
600	WUKV Jacksonville	1	1180	WDA Marathon	1
610	WTOB Miami	2	1190	WAJL PINE CASTLE	5
620	WSUN St. Petersburg	3	1200		
630			1210		
640	WROF Wildwood	2	1220	WQJK KISSIMMEE	5
650			1230	WNNW Lakeland	3
660			1240	WMMB Melbourne	2
670	CMQ Arroyo Arenas, Cuba	1	1250	WDAE Tampa	2
680	WLEF St. Petersburg	2	1260		
690	WPDQ Jacksonville	2	1270	WBZS EATONVILLE	4
700			1280	WIPC Lake Wales	2
710	WAGI Miami	3	1290	WTMC Ocala	3
720	WRZN Hernando	2	1300	WXXU Cocoa Beach	3
730	WTK Lake Placid	2	1310	WYND Deland	2
740	WNNZ Orlando	5	1320	WFKK Coleman	1
750			1330	WVAB Lakeland	4
760	WEND Brandon	3	1340	WITS Sebring	2
770			1350	WLRQ Cocoa	1
780			1360	WNNR CYPRESS GARDENS	5
790	WLEB Leesburg	3	1370	WOCa Ocala	1
800			1380	WBBQ St. Petersburg	4
810	CM-- unid Cuban	1	1390		
820	WRAA Largo	3	1400	WPAS Zephyrhills	2
830			1410	WJBQ Leesburg	3
840			1420	WBRD Palmetto	1
850	WROF Gainesville	1	1430	WLKF Lakeland	4
860	WOLX Cocoa	3	1440	WPRD WINTER PARK	1
870	CM-- unid Cuban	2	1450	WVJB Brooksville	1
880			1460	WBAR Bartow	2
890			1470	WLVU Dunedin	3
900	WROP Ocala	1	1480	WVCL OCOEE	4
910	WFLA PLANT CITY	4	1490	WSIR WINTER HAVEN	4
920	WML Melbourne	1	1500		
930	WLVF HAINES CITY	5	1510	WBBC Cocoa	2
940	WINZ Miami	1	1520	WTLN Apopka	3
950	WOMX ORLANDO	5	1530	WJBC Jacksonville	1
960	WJCM Sebring	1	1540		
970	WFLA Tampa	3	1550	WAMA Tampa	3
980	WLUS Gainesville	1	1560	WTAI Melbourne	3
990	WROD ORLANDO	5	1570	WTWE AUBURNDALE	5
1000			1580		
1010	WQWU CRESTVIEW	4	1590	WKEE St. Petersburg Beach	1
1020			1600	WZTO WINTER GARDEN	4
1030					
1040	WBOB Pinellas Park	3			

KPH
1010 AM/Ster

1010 AM/Stereo 103.9 FM

DUNCAN SHAW
SAN RAFAEL, CA
July 26-31, 1990
various times

540 KPUP Carmel
 550
 560 KSFO SAN FRANCISCO
 570
 580 KQJ Fresno
 590
 600
 610 KFBK SAN FRANCISCO
 620
 630
 640 KFI Los Angeles
 650
 660 KTNW Window Rock, AZ
 670
 680 KNER SAN FRANCISCO
 690 XETRA Tijuana, BN
 700
 710 KFIA Carmichael
 720 KJVN Las Vegas, NV
 730
 740 KJBS SAN FRANCISCO
 750 KXL Portland, OR
 760 KPMB San Diego
 770 KPLA Riverbank
 780 KROW Reno, NV
 790 KABC Los Angeles
 800
 810 KGO SAN FRANCISCO
 820
 830
 840 KVEB Las Vegas, NV
 850 KDA Denver, CO
 860 KTRB Modesto, CA
 870 KPHL Laughlin, NV
 880 KPMC Gonzales
 890 KXJX Saint George, UT
 900
 910 KNEW OAKLAND
 920
 930
 940 KFRE Fresno
 950
 960 KABL OAKLAND
 970
 980 KFWB Los Angeles
 990 KIXA PITTSBURG
 1000
 1010 KIQI SAN FRANCISCO
 1020
 1030 KJOJ San Luis Obispo
 KTWQ Casper, WY
 1040
 1050 KOFY SAN MATEO
 1060 KPAY Chico
 1070 KNX Los Angeles
 1080
 1090 XEPRS Tijuana, BN
 1100 KFAX SAN FRANCISCO
 1110
 1120 KPNV Eugene, OR
 1130
 1140 KRAK Sacramento

1150
 1160 KSL Salt Lake City, UT
 1170 KLOK San Jose
 1180
 1190 KNBA VALLEJO
 KEX Portland, OR
 1200
 1210
 1220 KDFC PALO ALTO
 1230
 1240
 1250 KTVS Santa Barbara
 1260 KQTT SAN FRANCISCO
 1270 KPLY Sparks, NV
 1280
 1290 KSEL Chico
 KAZA Gilroy
 1300
 1310 KQIA OAKLAND
 1320
 1330
 1340 KQMY Watsonville
 1350 KSRD SANTA ROSA
 1360
 1370 KEEN San Jose
 1380
 1390
 1400 KBFN BERKELEY
 1410
 1420
 1430 KJAY Sacramento
 1440 KVIN NAPA
 1450 KEST SAN FRANCISCO
 1460
 1470 KQIA Sacramento
 1480 KVIN CONCORD
 1490 KTOB PETALUMA
 1500 KSJX San Jose
 1510 KTIID SAN RAFAEL
 1520
 1530 KFBK Sacramento
 1540
 1550 KQOI SAN FRANCISCO
 1560 KPMC Bakersfield
 1570
 1580
 1590 KLTW San Jose
 1600 KIRA Tuba City
 1610 IIS NEWARK

The Broadcaster's
Guide to DX

A tri-fold guide for use with reception reports explaining DX'ing, how the NRC was formed, and the importance of QSL's to DX'ers. Versions also available in Spanish and French. US\$1.50 for 20. Available from the Pub Center.



KFuo 850 AM 99.1 FM
lutheran radio

85 Founders Lane
 St. Louis (Clayton) Missouri 63105

Frequency
Deviations

Raymond F. Cole

Rt. 3, Box 304
 Cape Girardeau, MO 63701-9543

Observations of measured frequency deviations and associated activities

Copyright © 1990 by Mike Knitter for the National Radio Club, Inc.

There is a 90% chance of a 5.0 to 6.5 quake on the West Coast on the 21st or 22nd. Most probability: near Los Angeles on the 21st. Second most probability: near San Francisco or northward on the 22nd. There is a slim chance of a 12 hour "trigger time" delay on these. 9-17-90- Ray Cole

A 4.0 hit 35 miles south of San Jose at 9:59 my time here, followed by a 3.0 early the next morning at Menlo Park, perhaps a few hours earlier than stated in the note above. (Do a 4.0 plus a 3.0 equal a 7.0?)

The above projection was determined on 9-15-90, 9:45 AM, local time. The following were either given copies of the above note, or told about it by phone on the dates noted below.

On the 16th, by phone -	On the 18th, by note copies -	Harold Drysdale
Mike Gray	Sander True Value Hardware	First Assy. of God
Jim Berkland	(5 persons)	(4 persons)
On the 17th, by phone -	Howard Suedemeyer	Alvin Hatch
Don Pritchard	Southeast Missouri Machine Shop	On the 19th, by phone -
Edison Shrum	(3 persons)	Don Atkinson
Harley Rutledge	Patrick Cleaners	Brian Allworth
Al Ratkelis	(5 persons)	On the 20th, by phone -
		Bob Flick

These represent (not in order) a president of an investment corp., a minister, a physics professor, an emergency medical coordinator, three business owners, a T-V meteorologist, a radio talk show host, a highway engineer, a geologist, an author/geologist, a machinist, a retired electrician, and just friends. 29 witnesses who all know something about my past accuracy.

All of the preceeding should speak for itself quite eloquently. This is written very late PM on the 24th. And the pressure is still on for the West Coast - so I expect more, probably next weekend, or as late as Tuesday.

A previous study covering 5/22 thru 7/6 showed 24 "warnings" here followed at the proper time intervals by 22 quakes westward (plus a "warning" right after that study period that did not result in a quake). (83%).

But the "experts" (who predict in terms of decades) say that there is no more risk of a quake on a given day than on any other day. And to predict risks of quakes on the West Coast based on findings in Missouri is simply too ridiculous to even mention. Especially - I find - when it comes from a source with no academic credentials.

I am 68 years old and my remaining time is very precious to me. I do not intend to continue spending all of my time and efforts on an unrecognized and thankless effort without funding for a badly needed net of monitors to cover a 120 mile seismic zone, without a data gathering capability, without a data processing capability, and without the means to further explore for better understanding of causatives. (And a grant application last Spring was denied). At times, even sufficient postage stamps have been a burden.

Nor do I wish to follow up on my invitation from the Moscow Academy of Science to participate in a research program there.

As things now stand, I intend to shut down this effort about March 1, 1991. After four and a half years I will say "enough is enough".

(I also had a letter prepared in event no quake occurred as per my projection, since I believe in reporting dismal failures as well as success. Herewith, that letter goes in the wastebasket.)

9-24-90 Ray Cole

Musings of the Members

Thoughts from NRC members ... the opinions expressed in this column are those of the individual writer and do not necessarily reflect those of the editors, publishers, or the National Radio Club, Inc.

Dave Schmidt
P. O. Box 11502
Wilmington, DE 19850

Times are local per Muse.

JOSEPH K. JOHNSON - 3119 GIBBONS STREET - SAVANNAH, GA 31404-4910
Greetings from America's first planned city! It's now October, won't be long until we'll be DX'ing everywhere. I was hoping to have an answer from ABC Talkradio about their rumored demise mentioned by Bob Anderson this past June, on his early morning talk program. Thus far, they haven't answered my letter. Not much to Muse about with the exception that I'll be keeping my eye on the local radio market for any future changes. That's it for now, so-long!

CESAR OBJIO - CALLE ENRIQUE HENRIQUEZ 69 - SANTO DOMINGO, DOMINICAN REPUBLIC
Hi, friends, here I am again, too soon, I think, as I am not used to Muse so often! But, happy to be here again! After a long delay, I received DX NEWS #28 July 30 issue on SEPTEMBER 4th by AIR MAIL, can you imagine that? But it was returned to Topeka according to a note written by the PLS and marked in green requesting the USPS not to delay it. But I may add, the US postal service is wonderful if you compare it to ours. For instance, Clasica Radio, the classical music station on 97.5 mhz. At the end of the month, they send me the up coming month program schedule by local mail. We are less than 3 miles away and I usually receive it at the end of the FOLLOWING month when it is already useless! (Someone else must want to read it then send it to you-DS) The important thing in DX NEWS, I read a short note about a Super 12-655 from Ray Cole, what a great idea? When I attended the Atlanta convention in '78, some members presented several changes they made on the Radio Shack TRF, one was a digital readout, another added a signal meter, etc., and they were not electronic engineers as far as I know, so why can't Radio Shack do that with the same circuit as the TRF? Now, my idea is for all club members interested in this type of set, write to Radio Shack regarding them to produce this unit again. What do you think? Lots of 73's to you all!

RICK DAU - RR2, BOX 64 - OAKLAND, IA 51560
Hello again from the Hawkeye State! The 4 day trip to MN that I hinted near the end of my last report did see the light of day, and it was worth it. On Sat. 8/4, I departed with Fargo, ND as my 1st stop. Around noon, I made a stop in Fergus Falls, MN. While there, I noted a sign on a one story building near I94 that read "The Future Home of KJJK-1090." Curious, I knocked on the door and was greeted by a friendly lady who filled me in on the details, namely that construction was proceeding well and that KJJK should be moving in around Oct. or Nov. After the visit, I headed west on I94 to Fargo. After unpacking, I visited KPNW-1200 where weekend DJ Dennis Swanson gave me a good tour. Dennis also mentioned he had worked for KCAM-790 (who ran a DX TEST this past season) about 10 years ago. After a stay in Fargo, I was back to Fergus Falls for a stay there. In the afternoon, I went to my family's old vacation spot on the north shore of Otter Tail Lake and did a bandscan. Heard Duluth, Winnipeg, Regina (SK), Bismark and even Omaha! Before leaving, I visited KBRF-1250 and was given a great tour by OpM Barbara Vangrud. She was interested in the issues of DX NEWS that I showed her and was given many promo items in return. 100 miles to the south, I stopped off at Montevideo's KDMA-1460 (the calls stand for Dawson-Montevideo-Appleton, the immediate cities the station serves), and PD Dwight Mulder and News Director Mike Dupree gave me a good tour and additional promo items, including a jar opener! I paid a late afternoon visit to NRC'er Bill Moser in Lake Preston, SD before continuing south to Sioux Falls. Before leaving, I visited KXRB-1000, where PD Ratt Reno showed me around. He was interested in the Radio West Loop I showed him and mentioned he had done some BCB DX in the past. Then, east to KWOA Worthington, MN where DJ Larry Rogers was getting ready to head out to a remote but did give me a tour. Overall, it was a fun 4 days! Next report will have details on my convention trip! 73's & so long from The Farm!

PETE KEMP (KZ1Z) - P O BOX 73 - BETHEL, CT 06801
Greetings all. Hope that all had fun at Pittsburgh! Roger Barkley, formerly teamed with Lohman for 24 years will team up with Ken Minyard on KABC as of 10/1. Geri London's Horoscope Report on WLAD-800 has been moved from 2-3PM weekdays to 7-8PM Mon./Thurs. I wonder if she would be a good DX'er? (Yeah, ID the station before it gives the calls-hi!-DWS) President Bush has declared Radio Marti a success and has found \$16 million additional to upgrade programs. Stateside AM broadcasters fear additional retaliation from Castro's mega watt stations causing additional interference. Del DeMontreux, longtime fixture on WHN-1050 during CW days, later moving to WPAT, can now be heard on WYNY doing CW. So much for now!

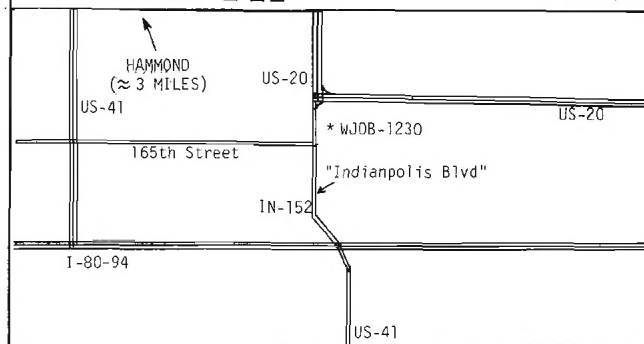
DAVE SCHMIDT - P O BOX 11502 - WILMINGTON, DE 19850

That is everything received for the last 2 weeks, not much. We still have additional reports from Rick Dau & Pete Kemp for next time. Keep in mind, if you want to have a weekly column, then you've got to support it. All reports are welcomed, reporting DX or information which is of interest. Semi-locally, WTYO-1580 has gone dark, citing the general decline of revenue as the reason. One FM change, WXPB-88.9 Philadelphia is scheduled to switch to 88.5 on 10/9. That's it, reports are requested for the column! 73's!

TOWER TIP

IN-2

WJOB - 1230
1000 WATTS
HAMMOND, IN



WHAT TO LOOK FOR: A single self-supporting tower right next to the WJOB studios. While parked under their tower, 1220 and 1240 kHz were clean of any splatter!

CONTRIBUTED BY: John S. Bowker - Valparaiso, IN

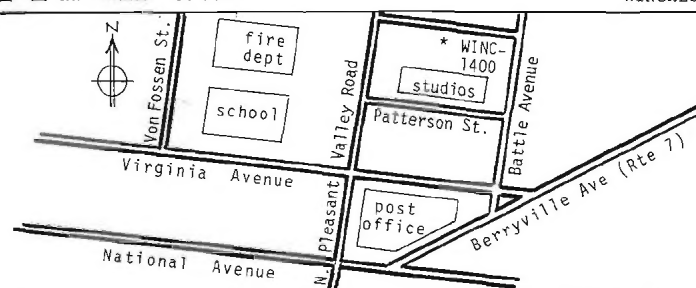
Send information about a.m. broadcast towers in your area to John D. Bowker, 14 Canoe Brook Drive, Princeton Jct., NJ 08550. Include a simple map (Bowker may re-draw it) showing major highways and any other terrain features near the tower(s). Tell how many towers, how they are laid out, and any other features that will help in spotting them.



TOWER TIP

VA - 1

WINC - 1400
1000 WATTS
WINCHESTER, VA



WHAT TO LOOK FOR: A single tapered tower at 520 North Pleasant Valley Road near the center of town (Interstates run all around Winchester just off this map in all directions). Studios are located at this site too.

SUBMITTED BY: Perry F. Crabill, Jr., Winchester, VA

Send information about a.m. broadcast towers in your area to John D. Bowker, 14 Canoe Brook Drive, Princeton Jct., NJ 08550. Include a simple map of the nearby highways and landmarks. Tell how many towers, how they are laid out, and any other information that will help in spotting each station.